EDUCATION INDUSTRY NEWS

Statistics Reveal Trends in Motion Pictures, Television

The Statistical Abstract of the United States, 1966 Edition, contains 1,039 pages of tightly-packed information (in fine print) in the form of statistical tables and accompanying text on practically every facet of life in the United States. The columns of figures reveal various trends in communications, including motion pictures and television. For example, Table No. 1202 (Persons in Distribution and Service Industries) shows that, in 1950, 234,000 persons were employed in motion-picture distribution and service in the United States (which then did not include Alaska and Hawaii). By 1964 (after Alaska and Hawaii had become States) the number had dropped to 169,000 but in 1965, the curve had started upward again with 173,000 full-time employees in this category.

Table No. 1224 (Motion Picture Theaters—Establishments, Receipts, Payroll and Employees by States: 1958 and 1963) shows that in 1958 there were 12,291 establishments and by 1963 the number had dwindled to 9,150.

A number of the tables in the book contain interesting facts about television. For example, in 1963, 90.8% of all households in the United States had black-and-white TV sets and 1.7% had color TV. The number of networks remained at three throughout 1960, 1963 and 1964, while the number of stations increased from 530 to 575 and broadcast revenues increased during that same period by more than $5 million.

These few little "plums" were picked almost at random from a number of tables dealing with many facets of the motion-picture and television industries. Information to be gained from a study of the statistics includes the industry's contribution to the national income, employment, hours and earnings, manufacture of equipment, expenditures for advertising and (in television) advertising revenues and much more related information.

Also available is the *Pocket Data Book USA 1967* which contains in condensed form some of the information contained in the Statistical Abstract.

The Statistical Abstract is available from the Government Printing Office, Washington, D.C. 20402 at a price of $3.75. The *Pocket Data Book* is priced at $1.50. Both books are publications of the Bureau of the Census, U.S. Department of Commerce and are also available from U.S. Department of Commerce field offices.

The 37th annual meeting of the Biological Photographic Assn. will be held August 20–24 in Toronto, Canada. Six scientific sessions will cover the topics of Photography in Science; Motion Pictures and Television; Photo, Ultraviolet and Electron Micrography; Close-Up and Photomacrography; General; and Science and Engineering.

The keynote address on "The Role of Photography in Scientific Investigation" will be delivered by C. B. Neblette, Dean of the College of Graphic Arts and Photography, Rochester Institute of Technology. An exhibition will be held in conjunction with the meeting where still photographs, motion pictures and television video tapes will be shown in competition for various awards. Preceding the meeting three our-day refresher courses will be given beginning August 17. The courses and instructors are: Patient Photography, taught by David Lubin; Photomicrography, Lloyd Matlovsky; and Medical Motion Pictures, John Vetter. Further information is available from the General Chairman, Marianne G. Gaettens, Princess Margaret Hospital, 500 Sherbourne St., Toronto 5, Canada.

Session chairmen for the 1967 Annual Conference of Photographic Scientists and Engineers (May 15–19, Chicago) are: Paul Gilman, Photographic Theory; Paul Vittum, Color; Jerome Goldhammer, Aerospace; M. L. Sugarman, Non-Silver Halide Processes; Miss Marilyn Levy, Silver Halide Chemistry; William West, Sensitization; Hutson K. Howell, Silver Halide Processing; Authur Cox, Optics; and Dave Woodward, General Photographic Science. Further information is available from Robert J. Mazor, Chairman SPSE Conference Publicity, Nugent-Williams Studios, Inc., 120 N. Pulaski Rd., Chicago, Ill.

A Seminar-in-Depth on Photooptical Systems Evaluation will be held May 11–12 at the Sheraton Hotel, Rochester, N.Y. Co-sponsored by the Society of Photooptical Instrumentation Engineers and the U.S. Air Force Systems Command, the seminar will deal with the evaluation not only of image fidelity but also of other optical and mechanical properties. Evaluation problems will be examined in terms of theory, specification, methods and data reliability. Papers will be presented in such areas of interest as specialized laboratory and manufacturing instrumentation and methods; field performance testing; correlation of laboratory and manufacturing tests with field performance; economic factors in selecting an evaluation method for a particular system; and prognostication of future techniques. Further information is available from John F. Carson, Chairman SPIE Seminar Program Committee, 65 Plymouth Ave. South, Rochester, N.Y. 14608.

The Audio Engineering Society will hold its 33d convention October 16–20 at the Barbizon-Plaza Hotel in New York. Session topics encompass amplifiers, audio applications, broadcasting, control consoles, disk recording and reproduction, film recording and reproduction, music and electronics, sound reinforcement, speech processing, standards and measurements, tape recording and reproduction, and transducers. Information is available from Emil P. Vincent, CBS Television Network, 51 W. 52 St., New York, N.Y. 10019.

The Illuminating Engineering Society's Theatre, Television and Film Lighting Committee will hold its third symposium May 14–16 in Los Angeles. The program includes a state of the art report, a lighting progress show, a number of technical papers and panel discussions and practical lighting demonstrations. To provide studio facilities for some of the technical presentations and demonstrations, a portion of the symposium will be conducted at CBS Television City. The main emphasis of the symposium will be on motion-picture lighting, although some papers and discussions will center around theater and television lighting. Further information is available from TTF Lighting Committee, IES, P.O. Box 188, Burbank, Calif. 91503.

The 15th Annual Columbus Film Festival will be held October 6–8 at Fort Hayes Hotel, Columbus, Ohio, under the auspices of the Film Council of Greater Columbus. The opening event of the festival will be the Chris Award banquet. Public screenings of the award-winning films will be held October 8. The films will be grouped in six categories: Business and Industry; Health-Safety and Medicine; Education-Information; Travel; Religion and Ethics; Graphic and Cultural Arts. Further information is available from Daniel F. Prugh, President, Center of Science and Industry, Film Council of Greater Columbus, 280 East Broad St., Columbus, Ohio 43215.

The Photographic Science and Instrumentation Department of the School of Photographic Arts and Sciences, Rochester Institute of Technology, has acquired its own computer to be used in senior and graduate research as well as courses in optics on undergraduate and graduate levels. The computer is a gift from Itek Corp. About 30 senior and graduate students will have access to it; they previously worked in the RIT Computer Center which is used by the entire student body. The new computer will be used for evaluation of optical systems. Programs will be stored in the computer and the student need only feed data required

for his particular problem. Several optical programs have been given to RIT by Itek. The computer may also be used by students for research in photographic chemistry or the structure of photographic images.

Name changes within the Rochester Institute of Technology's College of Graphic Arts and Photography have been announced by Dean C. B. Neblette. The photography school has been named School of Photographic Arts and Sciences. According to Dean Neblette, the new name is more descriptive of the range of programs available at the School. The Graphic Arts Research Department is now known as Graphic Arts Research Center. The new name more aptly describes the research and educational activities carried on by that area of the College, Dean Neblette said.

A water projection screen, composed of thousands of needle-like water jets, developed by Eastman Kodak Co. for the Kodak Pavilion at Expo 67 in Montreal, is expected to be one of the more sensational novelties to enhance Canada's first Worlds Fair. The water screen is part of an 8-minute slide show called *The Wonder of Photography.* A conventional screen used during the first portion of the program will be replaced by the water screen. A pair of glass-fiber pipes and a special system of pumps will allow three images from Kodak Carousel Projectors to appear suddenly before the audience on the fine screen of water droplets. The images are formed by rear-screen projection with the aid of mirrors.

The complete projection system includes 12 Kodak Carousel projectors — one bank of six for front-screen projection, and a second bank for rear-screen. Each bank is linked to provide three simultaneous images with dissolve capability and synchronized music-narration. Overall synchronization will be provided by punched paper tape which will control the water-screen equipment and energize the synchronized projectors. The dissolve controls used to control the projectors provide either a 1½-s lap dissolve or an instantaneous change, both of which are used throughout the presentation for dramatic transitions and special effects. Subjects to be seen on the water screen during a 3-min showing will include representational art and red-clad go-go girls. Butterflies appear to take flight, fireworks explode in midair, fish swim and great cities of the world shimmer on the watery backdrop.

A new mode of oscillation for gallium arsenide diodes that makes possible solid-state oscillators that operate at higher frequencies and with higher power at any frequency than other solid-state devices has been discovered at Bell Telephone Laboratories. The new mode is designated LSA (limited space-charge accumulation). The LSA diodes have a unique operating characteristic that allows them to oscillate at very high frequencies. The maximum frequency of other solid-state devices is limited by an effect called transit time, which is the time it takes a space-charge (a concentration of electrons or holes) to travel through the device. The smaller the transit time, the higher the frequency. In LSA diode oscillators, the space-charge is dissipated within

the material (n-type gallium arsenide) during each cycle before it builds up appreciably. RF power can be generated by LSA diodes because above a certain "threshold voltage" n-type gallium arsenide becomes a negative-resistance material.

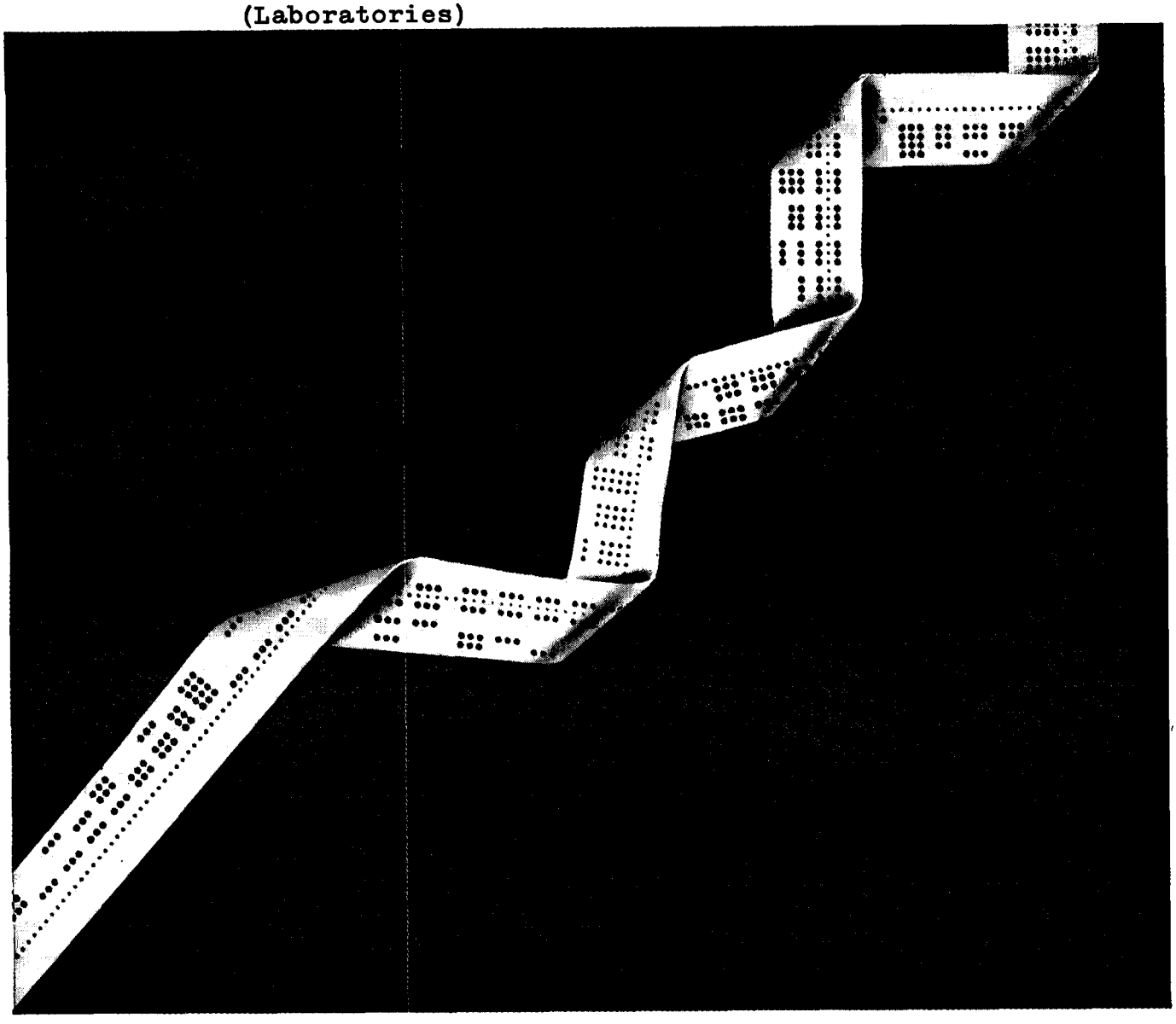
LSA diodes are operated as part of a resonant circuit which is tuned to the desired operating frequency. If a fixed bias voltage, which is above a threshold level is applied to the LSA diode, the diode presents a negative resistance. Then an oscillating voltage is developed which causes the total voltage across the diode to swing first well above and then below the threshold field during each cycle. The unique feature of the LSA mode is the selection of a diode such that the oscillating field swings above the threshold field long enough to generate a negative resistance but not long enough for the carriers to rearrange themselves into space charge waves or domains. When the field swings below threshold, any minor space-charge irregularities are smoothed out before the next cycle begins. Because LSA diodes are not transit-time limited, they can be made thick enough to withstand relatively high applied voltages.

An improved method of quartz crystal growing which will enable the use of man-made quartz crystals in place of natural quartz crystals in communications devices has been developed at Bell Telephone Laboratories and the Western Electric Co. One of the important measures of efficiency with which a crystal converts mechanical energy into electrical energy and vice-versa is called the "Q." It was found that the Q of man-made quartz crystals could be increased tenfold to about one million by adding lithium nitrite to the sodium hydroxide solution used in the normal hydrothermal crystal-growing process. It was also found that under special conditions of temperature, pressure and slower growth rates, man-made quartz crystals achieve a Q of up to two million, making them equivalent to natural quartz crystals in Q value. The higher the Q the greater the stability of the crystal's resonance and the higher the frequency at which it is useful.

A new technique has been developed at Bell Telephone Laboratories that makes possible the bonding of large numbers of flexible cables simultaneously to printed circuits or other cables. The technique permits soldering flexible cable with focused infrared energy. Although infrared soldering has been used in the past, its application to flexible cable is new. The soldering process is easy and provides a quick and inexpensive method for interconnecting circuit boards, such as those containing miniaturized solid-state components used widely in computers and communications equipment. The infrared source is a tungsten halogen lamp inside an elliptical gold-plated reflector which focuses the energy on the cable. The energy is transmitted through a quartz "window" and through the insulation onto the copper parts to be bonded. The thin coating of solder plated onto the cable beforehand is melted and forms a joint. The quartz window is one of the most essential elements in the process. The quartz protects the insulation by acting as a heat sink, serves as a clamp to hold the components in registration and permits visual alignment of the parts to be joined.

A method for analyzing the performance of high-power semiconductor devices has been devised at Bell Telephone Laboratories. With the new technique, pulses of current are sent through the semiconductor device to create an electric field. Device nonuniformities, such as high resistance metal-to-semiconductor contacts or doping gradients, contribute to unusual device performance and show up as variations in field strength. These variations are detected by using a point-contact probe — a single filament of tungsten — to measure various points on the surface of the device. The field strength readings are recorded as voltage pulses which are amplified and then fed to an oscilloscope where they are displayed and analyzed. A measurement point can be defined to within ± 1.5 μm. The new method can be used to analyze devices as small as 6 μm, including bulk gallium arsenide diodes and avalanche diodes.

Nagra Magnetic Recorders, Inc., a newly formed corporation with headquarters in New York, will provide factory service to owners of Nagra recorders in the United States. The recorders are manufactured in Switzerland. President of the new firm is Stefan Kudelski who won an Academy Award in 1966 for development of the Nagra portable ¼-in. tape recorder (Nagra III). Mr. Kudelski developed the first



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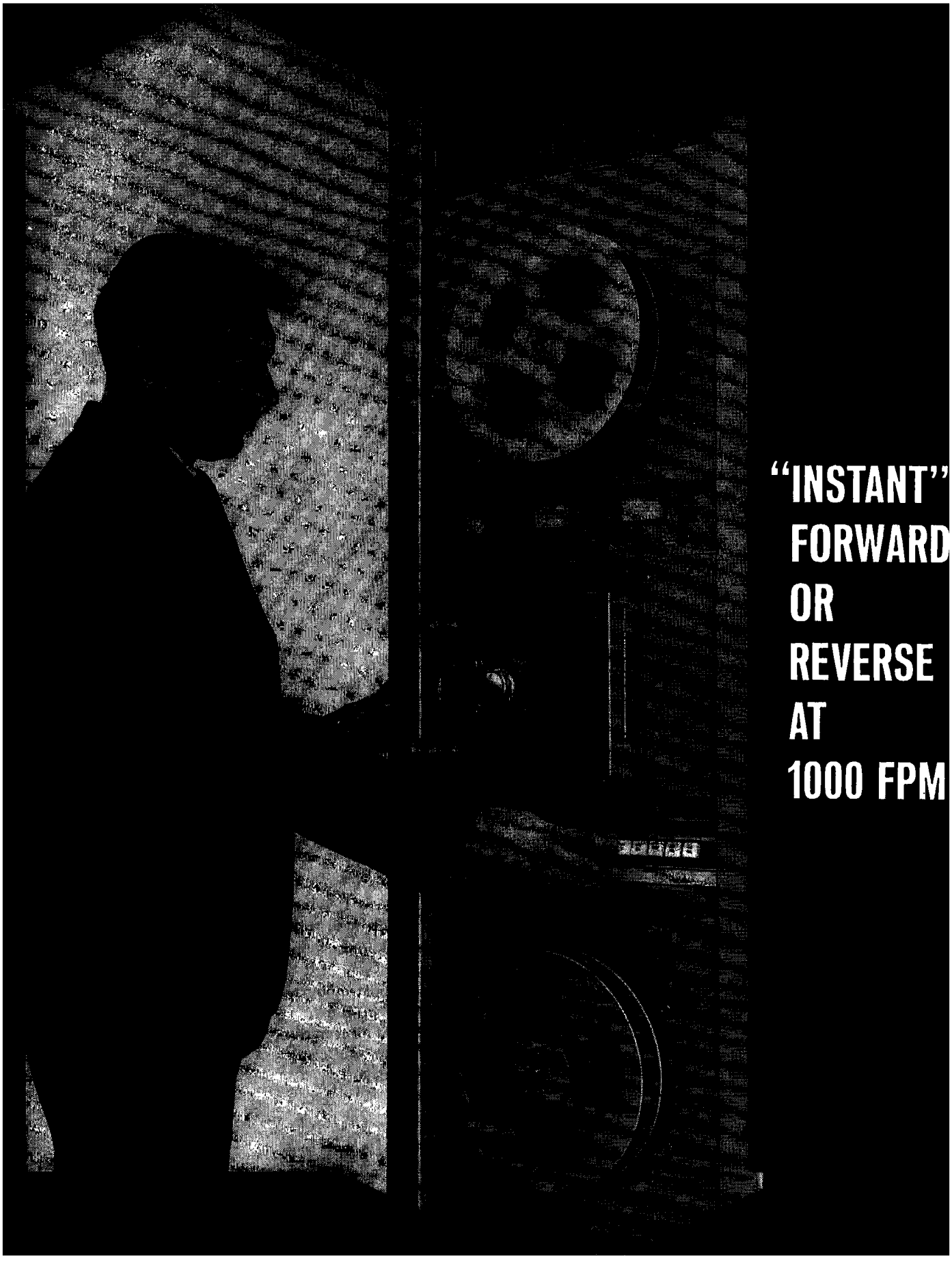

"INSTANT"
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1000 FPM

Nagra recorder in 1950 and an improved model called Nagra II in 1953. Vice-President and General Manager of the new firm is Loren L. Ryder, and Kenneth Upton is Sales Manager. The Ryder Magnetic Sales Corp. in Hollywood will continue to provide factory service to Nagra owners on the West Coast. Ronald R. Cogswell is General Manager of the Hollywood firm.

ME-4 Ektachrome 35mm Reversal Motion Picture Services have been announced by Bebell & Bebell Color Laboratories, Inc., 108 W. 24 St., New York, N.Y. According to the announcement, this is the only facility on the East Coast processing both 16mm and 35mm ME-4.

Producers Film Center, the new subsidiary of Producers Photo Lab, 948 N. Sycamore, Hollywood, Calif., has established a film library storage facility in its multicolor, 25,000 ft² building. The library provides "same-day" service made possible by an index system said to control more than 1 million reels of film. The main floor and basement storage areas of the building maintain even temperature and humidity for film preservation. In addition to motion-picture film, the center has sections for storage of audio, video and computer tapes.

Oran E. Miller of Kodak Park Works has retired after 40 years with Eastman Kodak Co. He joined Kodak Research Laboratories in 1927 where he worked in the fields of sensitometry, photometry, motion pictures, sound recording, color photography and optical instruments. He transferred to the Hawk-Eye Division in 1942 as training supervisor of the manufacture of fire control instruments. The following year he joined Kodak's Oak Ridge, Tenn. staff as research secretary in the process improvement division. He returned to Rochester in 1945 as a senior engineer and senior technical associate in the Color Technology Div. of Kodak Park Works. He was appointed Section Supervisor of the Physical Laboratories in the Photographic Technology Div. in 1954 and served as a special project consultant from March 1966 until his retirement. Mr. Miller is the author of many scientific and research articles, among them, "Color Temperature: Its Use in Color Photography," (*Journal, 54:* 435-444, Apr. 1950) and (with Stanley A. Powers) "Pitfalls of Color Densitometry" (*Journal, 72:* 97-103, Feb. 1963) and "Improved Printing Density Filters for Densitometry of Color Preprint Materials" (*Journal, 72:* 695-700, Sept. 1963).

R. S. "Tex" Rekert has been appointed Executive Vice-President of the National Audio-Visual Association of Canada (NAVAC). Announcement of the appointment was made by NAVAC President, Marvin Melnyk, who stated, "This new office is required in order to accomplish several important undertakings which will greatly benefit the A-V industry and educational technology in Canada." Mr. Rekert is presently Chief Purchasing Agent for the National Film Board of Canada. He will be working for NAVAC in a part-time capacity during 1967 and will assume full-time responsibilities in January 1968.